

3.13-3.15  
Quiz Review

Name \_\_\_\_\_ Period \_\_\_\_\_

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Find the component form and magnitude of the indicated vector.

- 1) Given that  $P = (2, 5)$  and  $Q = (-1, 10)$ , find the component form and magnitude of the vector  $\overrightarrow{PQ}$ . 1) \_\_\_\_\_

- 2) Given that  $P = (-2, 3)$  and  $Q = (-5, -7)$ , find the component form and magnitude of the vector  $3\overrightarrow{PQ}$ . 2) \_\_\_\_\_

Find the component form of the indicated vector.

- 3) Let  $u = \langle -6, -3 \rangle$ ,  $v = \langle -4, -7 \rangle$ . Find  $u + v$ . 3) \_\_\_\_\_

- 4) Let  $u = \langle -5, 0 \rangle$ ,  $v = \langle 4, -4 \rangle$ . Find  $-3u + 2v$ . 4) \_\_\_\_\_

Find the unit vector in the direction of the given vector. Write your answer in the indicated form.

- 5) Let  $u = \langle -2, 5 \rangle$ . Find the unit vector in the direction of  $u$ , and write your answer in component form. 5) \_\_\_\_\_

- 6) Let  $u = \langle -4, -3 \rangle$ . Find the unit vector in the direction of  $u$ , and write your answer as a linear combination of the standard unit vectors  $i$  and  $j$ . 6) \_\_\_\_\_

Find the magnitude and direction angle for the following vector. Give the direction angle as an angle in  $[0^\circ, 360^\circ)$  rounded to the nearest tenth.

7)  $\langle -3, -10 \rangle$

7) \_\_\_\_\_

Solve the problem.

- 8) A plane is heading due south with an airspeed of 275 mph. A wind from a direction of  $36^\circ$  is blowing at 15 mph. Find the bearing of the plane. (Note that bearings are measured from north, clockwise.) Round results to an appropriate number of significant digits.

8) \_\_\_\_\_

- 9) A basketball player shoots the ball with a velocity of 15 ft/s at an angle of  $38^\circ$  with the horizontal. To the nearest tenth, find the magnitude of the horizontal component of the resultant vector.

9) \_\_\_\_\_

Find  $a \cdot b$ .

10)  $a = \langle 3, -7 \rangle$ ,  $b = \langle -8, 5 \rangle$

10) \_\_\_\_\_

Find the angle between the given vectors to the nearest tenth of a degree.

11)  $u = \langle -4, 2 \rangle$ ,  $v = \langle 8, 4 \rangle$

11) \_\_\_\_\_

12)  $u = 2i + \sqrt{7}j$ ,  $v = -i - 3j$

12) \_\_\_\_\_

Determine whether the vectors  $u$  and  $v$  are parallel, orthogonal, or neither.

13)  $u = \langle 4, 0 \rangle$ ,  $v = \langle 0, -12 \rangle$

13) \_\_\_\_\_

14)  $u = \langle 2, -6 \rangle$ ,  $v = \langle 6, -18 \rangle$

14) \_\_\_\_\_

15)  $u = \langle 7, 8 \rangle, v = \langle 10, 8 \rangle$

15) \_\_\_\_\_

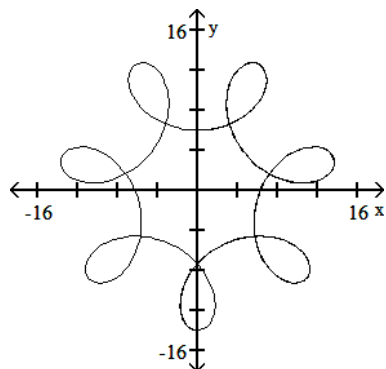
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the graph of the given parametric equations.

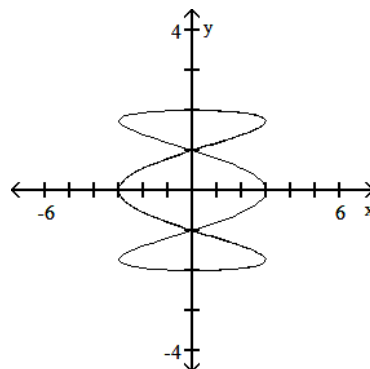
16)  $x = 10 \sin t + 4 \sin 6t, y = 10 \cos t - 4 \cos 6t$

16) \_\_\_\_\_

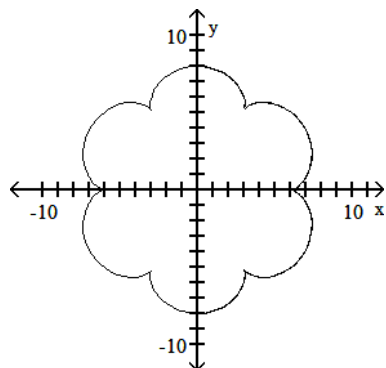
A)



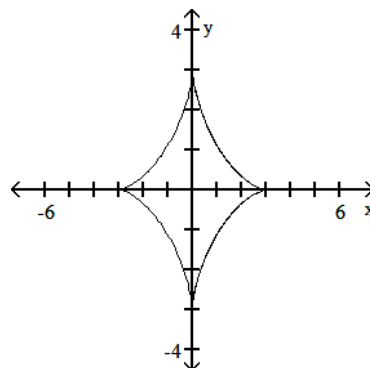
B)



C)



D)



SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Eliminate the parameter.

17)  $x = \sqrt{t}, y = 3t - 1$

17) \_\_\_\_\_

18)  $x = 2t, y = t + 3$

18) \_\_\_\_\_

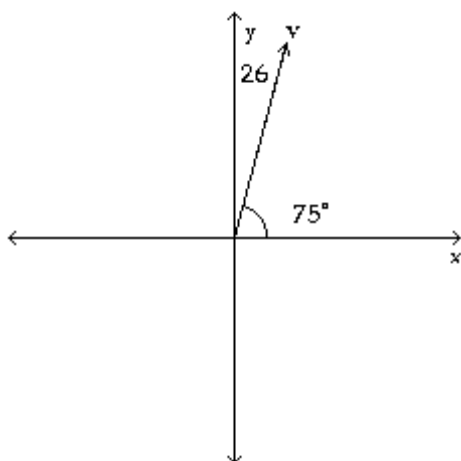
Solve the problem using a graphing calculator.

- 19) Estimate the maximum height reached by a baseball during its flight if it is thrown with a velocity of 98 feet per second at an angle of  $52^\circ$  relative to level ground.

19) \_\_\_\_\_

Find the component form of the vector  $v$ .

20)



20) \_\_\_\_\_

Graph the pair of parametric equations.

- 21)  $x = t^2$ ,  $y = \sqrt{t} + 7$ ,  $0 \leq t \leq 4$

21) \_\_\_\_\_

